

CATS



The Official Journal of the Capital Area Timex/Sinclair Users Group

Presidential Ramblings

SEASONS GREETINGS EVERYONE!
Although I'm writing this before the start of any of the Holidays, you'll no doubt read it after they've all been celebrated except New Year's Day. I trust they were special for each and every one.

The CATS Holiday program was fun filled and informal. Several members set up computers on tables all around the meeting room for members to try their skill on various games. All four of Sir Clive's machines were in use, several in duplicate, and a wide range of games were available - from Bridge to golf to a myriad of the "space zappers" type of intellectual achievement. The graphics on several were quite advanced, reminding us that our "Orphans" can hold up their heads among the best of them! Lee Gayman brought his enhanced version of a Bio Rhythm program and provided personal printouts, also demonstrating that ye olde 2040 can be hooked up to a QL! A well stocked refreshment table added to the festive atmosphere, as did Hank's lighted Christmas Tree/Hanukkah Bush!

Each QL owner present was given a disk filled with games, courtesy of Tom Robbins. And, despite Tom's warning that one of them contained a "bug" which prevents the player from moving the spaceship (or whatever the thing-gum-bob is) out of the upper right hand corner, Cliff Watson's son promptly proved that Tom's assertion was based in player ineptitude rather than on a

Next Meeting: 5 January

software problem.....his "spaceship" simply zoomed around the screen! (To get your Freebie Game Disk bring a formatted disk to a meeting or mail one to our P.O. Box, along with return postage.)

We held a brief meeting about half way through the afternoon, mainly to hear Duane's announcement about the January 19th meeting to be held in the Baltimore area. This is an experimental "extra" that just may evolve into a regular part of the CATS' schedule. Read the details elsewhere.

SHARING NEWS: (1) CATUG (Chicago) sells several interesting 2068 items. For the Larken user who has less than Version 3 Firmware just \$5 will send you an updated EPROM, a SYSTEM Disk, and a MANUAL - including S & H. \$12 buys a Spectrum V2 kit (EPROM, socket and 74HCT32). The 747 Flight Simulator for Spectrum sells for \$10. (I've seen the manual, so can understand why 40K of these sold in Europe!) And only \$5 for LogiCall AOS-LKDOS Software Ensemble for TS2068 and Spectrum seems too good to be real. Call or write Bob Swoger: 708/837-7957, 613 Parkside Circle, Streamwood, IL 60107. (2) The New England Sinclair QL Users Group (succeeded the QL subset of the Boston Computer Society) is now going strong. Peter Hale (of

Contents

Presidential Ramblings	1
From The Editor	2
Next WorkShop	3
Calendar Program Needed	3
Special Get Together	4
Jack Dohany: Software/ Hardware	4
Little Languages	7
Computer Speed, Here's More	7
QLIPS	9
The Printer Port	10
More From Nov. Speaker	11
Hubble Space Telescope	13
Stepping Rate Fix	13
Data Transfer on the Serial Port	15

Key Dates

- 5 January: CATS Meeting
11:00 Workshop
1:00 Executive Board Meeting
2:00 General Meeting
- 19 January: Newsletter Deadline
For the Next Issue
- 9 February: CATS Meeting

EmSoft fame) edits their NL. To see it for yourself, send \$10 to Treasurer Dick Taylor, 309 Holly Circle, Tiverton, RI 02878. (3) Lastly, just in case someone out there is as naive a QL Printer owner as I am - should you need a replacement ribbon, buy one for a Seikosha 1000 or Radio Shack DMP 130!

"Nuff for now

RUTH

From The Editor:

From last month's issue, you can see that the meeting dates are a bit erratic. This means that the newsletter deadlines will be erratic. Some of the article deadlines will be just days after the meeting. I can't change this, because it takes so many days for the newsletter to get from my door to your door.

Just so you know, I count back 19 days from a meeting and make that the article deadline for the issue of that month. On a few instances, 19 days is just after the meeting. I'll keep everyone informed in the newsletter.

Since this is one of the months when the newsletter deadline came early, did not have time to think up things to say, so I'll just say: Read the newsletter to keep up of the meeting dates, places, and the newsletter deadlines!

Happy Hacking,

TIM

Next Workshop

By Duane Parker

In the December workshop we continued our work on the disk cataloging program. Herb Schaaf brought in the 13th modification of his version (he claims to have Babagge's disease - he will have to tell you what that is!), and Lee Gayman contributed some better screen displays. No other projects were accomplished - I guess most of the members were into the holiday celebration. Our workshops will continue on January 5th and 19th (see notice of Special Get Together). Bring in your ideas and hardware and software (at 11:15 AM on 1/5 and at 1 PM on 1/19). Present projects, continued:

1. The cataloging system has now reached the point where the program will automatically recover disk names, file names, and information from the file itself and write the data into a file suitable for generating an Archive database. If I can find a bit of time, I plan to merge Herb's and my programs. Come and get the new version. We now need to get some Archive programs written to operate on the database that is generated.

2. Need help with your hardware? Bring it in. We'll give you all the advice that we can. Recent projects on the QL power supply modification can be continued (see October's N/L). For Barry Washington's QL-autobooter we have circuit diagrams and parts list - come and get them.

3. Several members asked for help with making monitor cables for the QL. Bring in your parts (see December NL), we will help you with this. No one brought any in last month.

4. We can still try out some networking ideas. I have some code written to try networking without the Toolkit! So let's bring our

QL's and cables and try this out!

Any other ideas? Bring them in. Set-up early so we can have fun with these projects.

Calendar Program Needed

By Lee Gayman

Several Christmas's ago, a young nephew of mine gave each of his aunts and uncles a large, computer-generated 12-page 8-1/2" X 11" calendar on which all the birthdays, anniversaries, and other important dates of the family were printed in the appropriate calendar blocks for the year. It was perfect, because that year, I didn't need to buy an appointment calendar at the local book store to hang in my kitchen as usual. I was also much more in tune with family obligations that year.

Says I: "I have a great computer (QL), and I also have many important dates that my nephew doesn't know about, why can't I have a program for my QL that will do the same thing?"

While I have a rather good calendar generating program in SuperBasic, I have not had the QL programming expertise to know how to generate a data bank that would store the information for important dates that would automatically insert the appropriate information in the appropriate block on the calendar. (If my mother-in-law's birthday falls on Tuesday of next year, the program should enter that information in the Tuesday block on next year's calendar.)

I know this publication is supposed to supply it's members with information, but this is an appeal for anyone interested to help me develop a calendar program (or at least give me some directions as to how to begin development of such a program) that includes a nice calendar printout (using "WRITE-TURN" to print it sideways) on an 8-1/2 X 11 sheet of

paper complete with all important dates so indicated.

Who knows, if such a program not only keeps me aware of my mother-in-law's birthday but my wife's birthday too, it just might save a marriage! Thanks for your help!

Special Get Together (Go North!)

By Duane Parker

Hey, CATS members, make like BATS in January and come to Baltimore (actually, Linthicum). Because of our rearranged schedule, the Executive Committee has decided to have an extra "Special Get Together" on January 19th, 1991 at the Linthicum library on Hammonds Ferry Road, at Shipley. We have the room from 1- 5 PM. Tom Robbins will discuss and demonstrate "Quill Enhancements". So, if you want to know how to switch printers, use the "Turbo" facilities, use the spell checker, or anything else about QL's own word processor, come to this session. If you know all about Quill, come anyway, we will run a workshop and we are always ready to share our ideas.

Where will it be? Generally, the Linthicum library is north of the Baltimore-Washington Airport (BWI), east of the Baltimore-Washington Parkway, and south of the Baltimore beltway (I-695). See the enclosed map.

From the south, drivers should use the BW Pkwy, and exit to east I-195 (I-95 also has an exit to I-195), then take next exit to MD 170, north (Camp Meade Rd). Follow 170 for approximately 2.5 miles, make a sharp left onto Hammonds Ferry Rd. - the library is a few blocks further on the left.

From the north, west, or east, gain access to I-695 and take exit #8. From the west, the ramp exits directly to Hammonds Ferry Rd. From the east, one must follow a loop onto Nursery Rd., then left

under I-695, and left onto Hammonds Ferry Rd (these turns are well marked with large signs, and a sign points to "Library"). Follow Hammonds Ferry Rd for approx. 2 miles. Library is on the right.

Call me (1-301-285-2799), Bill List, or Cliff Watson for help on these directions if you need it.

Jack Dohaney: Software/Hardware

By Dick Wagner

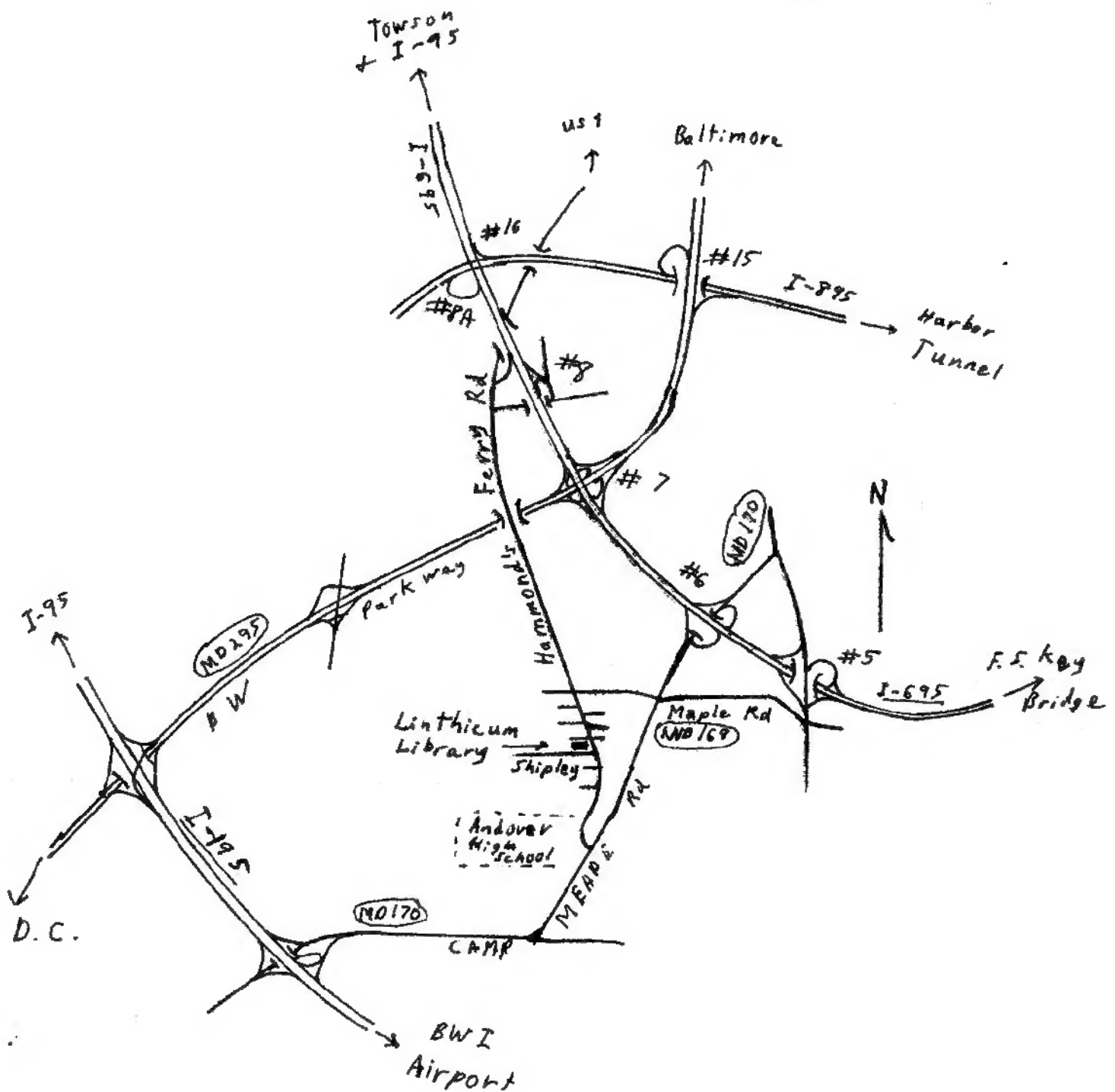
From May 1990 Plotter

Jack's specialty is producing for the 2068. He has been at computer programming for some years and has developed many up-grade issues of programs like the word processor, MSCRIPT. Readers who attended the North West Computer Fair in Portland will remember that Jack was verbal in his ideas, and was probably the only software programmer there who was producing his products on the spot.

Well, a recently received letter from Jack Dohany has given me an idea of how he is concentrating on the 2068 this year, not only programs but also hardware of his own designs. He has abandoned the QL in preference to the 2068.

First, a few notes on programs. There is an up-grade of MSCRIPT to version 5.5. Also, there is a nice graphics program called "GYSEY V2". He can provide a draw program from Billy McBride, a printed circuit board designer called "PC-DRAW" by M.D.M. Enterprises, and "EXTENDED PAINT" by Dave Franson, to name a few. The biggy is the English program "WORD-MASTER", a combination word processor and graphics handling program that is a desk top publishing type. This last one requires a Spectrum Emulator. There is a "DISK FILE MANAGER" (DFM) that is designed for Oliger, Larken and Aerco systems. This one works equally well with Spectrum or 2068 models.

Map to Linthicum Library



Jack states that he can provide almost any non-game software that has ever been written for the 2068, besides his own products.

Jack has some nice hardware innovations. First of all, to use "WORD-MASTER" one must have a Spectrum emulator. So he can provide an internally installed 32K EPROM with 16K for a CORRECTED 2068 ROM, and 16K for the CORRECTED Spectrum ROM. (I wonder if that awful cursor problem, when editing, is fixed). An external double throw switch is provided for ROM selection. On top of this the purchaser can obtain a 64K EPROM in place of the 32K one, adding 16K for OS64 (requires a good monitor). This leaves 16K for future development.

There is also available a special Aerco-compatible printer interface for internal installation. Add to this a dual EPROM with a "native" printer driver program, if desired.

The hardware that Jack can provide is innovative and down to earth in operation and price. Did anyone ever wonder where the Zebra stock of disk systems went? Well, Jack can provide complete systems with a new drive interface, much smaller in size and no twister cable is required. Do members recall when Tim Woods showed up with his Zebra system and displayed that odd twisted cable? This system is Spectrum compatible.

Readers who have been interested in an EPROM programmer can obtain one from Jack. It installs on to the rear port and can handle EPROMS from 16K to 64K. I have requested additional information on this item.

Like Larry Kenny, Jack is working on a fast spell checker, only his is for MSCRIPT and WORD-MASTER. I believe Larry's is for TASWORD.

Other products in the mill are, an inter-system Disk File Manager called XDFM, an 80 column display

system called SYS80, a vastly improved DEVPAK assembler/disassembler, a full screen editor, plus many more.

Users of the A&J IF will find that Jack is not strong on programs for this IF, but he strongly supports Aerco, Oliger, Zebra, and Larken systems. (Remember Jack's remarks at the Fair about preference for the Oliger system? It seems he has been willing to work with LKDOS. Maybe he is like I am, still first preference for Oliger for ease of operation).

Prices--you can't beat this, "TRY BEFORE YOU BUY" the software. Pay \$3.00 for shipping and then pay for what you want after a trial period. Just return the undesired utilities/programs!

Because much of the software is customized to fit a user's system, it is essential to provide FULL particulars about your equipment and what you want. One thing to be aware of, only Epson work alike printers on graphics programs.

Cost-wise, WORD-MASTER ranges from \$18.00 to \$67.00, depending upon the options. MSCRIPT V5.5 is \$25.00 and the user must own an original. Owners of prior versions need pay only \$15.00 for the up-date. If variations are required to fit the user's equipment then there is an additional cost of \$5.00. The Aerco compatible interface costs \$25.00. If he installs it there is a service charge. It is helpful that a 2068 loaner is available. The Spectrum Emulator kit (32K) is \$15.00; add \$15.00 to install (if required), add \$5.00 for a loaner. For \$5.00 more you can order the 64K EPROM with OS64. For Zebra users, the IF with dual EPROM (8K) costs \$10.00 in kit form, \$10.00 to install, and \$5.00 for a loaner. The price for the Aerco compatible printer IF installed inside the case is \$40.00. This has the dual EPROM with a "native" print driver program installed.

The above are extracted from Jack's letter and flyer so interested consumers should write and get full particulars, being specific about your needs. For the present write to 435 Woodward Way, Athens, GA 30606. In July Jack will be moving back to California so write to his old address, 390 Rutherford, Redwood city, CA 94067.

Little Languages

By Tim Swenson

Part Two: Definition of Little LOGO

The first part of the exercise is to define what part of the LOGO language we will implement. I looked for commands that should translate fairly easily into SuperBasic, but I also wanted some control structures so that I would not handicapp Little LOGO. Below is the definition. The parts in ()'s are the abbreviations for some of the commands. Instead of typing FORWARD, you can type FD.

```
FORWARD x      (FD)
RIGHT  x       (RT)
LEFT  x        (LF)
BACK   x        (BK)
CLEARSCREEN    (CS)
TO text
END
PRINT [ text ]
REPEAT x [ text ]
SETCRUNCH x y
PENUP          (PU)
PENDOWN        (PD)
SETBC x
SETPC x
WAIT x
:text
```

The term x is used an any number or variable. :text is a variable definition. Text is any plain text. The TO command is like a define procedure command, ended by an END. TO SQUARE means to define a procedure called SQUARE. The REPEAT commands means to repeat x times the commands in the square brackets. SETCRUNCH is like the SCALE command. SETBC is set

background color (PAPER). SETPC is set pen color (INK).

I refer you to a manual on LOGO to really understand this. I will be printing example programs as I go along. They should help you understand how things go together.

You must put spaces between the []'s and any text in them. REPEAT 10 [RIGHT 20] will not work. Use REAPEAT 10 [RIGHT 20], instead. Any unknown words are assumed to be variables. The translator does not care how the source code is formatted. As long as there is a space or newline character separating each keyword. It is not case sensitive, it will convert all code to uppercase as it goes.

Here is an example program:

```
TO square1
  FD 40 RT 90
  FD 40 RT 90
  FD 40 RT 90
  FD 40
END
```

This defines a procedure called square1 that draws a square. Like a SuperBasic procedure, it can be called at any time in the LOGO program.

Next month I'll tell you what an lexical analyser is, what it does, how it works, and provide the source code for the Little LOGO lexical analyser.

Computer Speed, Here's More

By Duane Parker

Back in June of 1989 I wrote some programs for the QL in three different languages (Forth, Pascal, and SUPERBASIC) to illustrate differing speed obtained by a threaded/interpreted language, a compiled language, and our standard QL interpreted language (see 9/89 and 1/90 CATS NL). The program was a 17-line program (Superbasic version) that would determine prime numbers less than 32767, and would stop at any value entered by the

user. Herb Schaaf went off to a class on "C" programming and converted my code to "C" (with his improvements, of course - see 7/90 CATS NL). With his source code in "C" he had the opportunity compile the program and test it on the QL and a bunch of computers, from the QL (in its native mode and emulating an MS-DOS machine) up to a DEC VAX-8650, and even a Cray Supercomputer. Run-times varied from approximately 0.001 seconds to 2070 seconds to count all positive primes less than 32767.

I now have made some more comparisons for this program. First, I obtained two of the compilers for QL Superbasic (QL Liberator, and Turbo-Charge) and compiled the SuperBasic code with each compiler. Although the Liberator compiled the code just fine, Turbo-Charge didn't manage to compile it until I improved the code to take care of a poor FOR - NEXT loop. Anyway, the run-times to count primes from 32K to 29000 are as shown below:

	seconds
SUPERBASIC (intepreted)	245
Liberator	53
Turbo-Charge	40

Therefore, we can speed up this simple program by 4.6 to 6.1 times with the respective compilers. Herb and I also reported that Pascal (Metacomco) and "C" (Small-C) compilers produce programs from appropriate source code that will perform this task in 27 and 16 seconds, respectively.

Interesting? I obtained a "no-name" "286" IBM clone with CPU speeds that could be set to 6 Mhz or 12 Mhz (0 wait states) last February. Therefore, I could make some more comparisons. I converted the SUPERBASIC version to GW Basic, and I converted the QL Forth program to run on the IBM-clone with the use of a public domain Forth kernel (Laxen & Perry's F83, April 1984). To go to the same 29000 limit the times (seconds) were:

	QL	IBM-clone	
		6 Mhz	12 Mhz
Forth	23	No Data	11.5
Basic	245	118	57

Since these language interpretation systems have all sorts of differences, I am sure that we can not ascribe these time differences to any particular factor.

We can still look at the "C" version of the program - Herb was kind enough to send me the compiled MS-DOS code, obtained by three different techniques. One was compiled with Turbo-C on an IBM PS/2 Model 30 (a "286" machine), one with Turbo-C and the QL with the Conqueror MS-DOS emulator, the third was compiled with the latter combination, but with MIX-C. All of these counted the primes down to 29000 in 2.0 seconds, at 12 Mhz and in 3.5 to 3.9 seconds at 6 Mhz on my IBM-clone. For a more complete comparison, I determined the run-times to determine all positive prime numbers below 32K. The results, including Herb's earlier values, were:

	seconds
DEC VAX-8650	0.2
My IBM-clone, 12 Mhz (either)	16
Toshiba T5200/100 (Turbo-C)	22
My IBM-clone, 6 Mhz (either)	31
IBM PS/2, Md1 30 (Mix-C)	42
IBM PS/2, Md1 30 (Turbo-C)	55
QL & Conqueror emulator (Mix-C)	1390
(Turbo-C)	2070

Thses results seem to show that the Conqueror runs about 33 to 86 times slower than the computers that it emulates. I also find that it is curious that the Toshiba and "no-name" computers run this program slower than IBM's PS/2 that uses the same 80286 micro processor.

QLIPS

By Hugh Howie

From March-April 1990 Sinc-Link

We have all had that "crashing" experience with the QL, and I wonder how often the crash is our own fault? My own little beast of burden had a problem at one time, but after some operation on its innards, the crashing was not quite so frequent, until recently that is, when I installed a plastic Carpet saver under my chair. This, combined with our present day mixture of wool and man-made fabrics, both in our upholstery and our clothing, made an ideal breeding ground for STATIC.

The problem seemed to arise when I used the printer, I had also noticed that when I left the Work Station, and returned, I was often welcomed with a little jolt to my fingers as I approached the QL and/or my Music Centre which is within reach of the QL.

The solution?

I use a sheet of thick corrugated card-board on top of my desk, on which my equipment rests, (it is easier on the arms than wood). So I went to the hard-ware store and bought a roll of Aluminum Tape, about 1 1/2 inches wide, the kind used in duct-work. Now don't get the fabric type, get the METAL type. I placed a strip along the front of my desk, about an inch from the edge and along the end, to the back of my desk. From there, I attached a piece of wire, which goes to the casing of my disk power supply, which is the nearest ground I could get. To attach the wire to the aluminum strip, I bare an end of wire about two inches back, make this into a loose coil, lay it on top of the card-board, and place the tape on top of the coil. The other end is attached to the power supply by using one of the screws on the cover.

CAUTION:- Ensure that the aluminum tape is cleaned a little at this point, as the adhesive is not always conductive material.

Next step is to get some Scotch Tape, about 3/4 inch wide, and lay a strip of this along both edges of the aluminum tape, ensuring you do not cover up too much of the width of the aluminum tape. The reason for placing Scotch Tape along the edge of the aluminum tape, is to help prevent the edge of the aluminum tape from lifting, also, if the aluminum tape should wear out a bit in the centre, then there should always be a complete circuit under the Scotch Tape. Follow me? (Check continuity) You must ensure there is an ample width of aluminum tape available for hand and arm contact, in the middle of the strip.

To finish this off, solder into the wire to ground, a one meg-ohm resistor. This will allow the static charge to bleed away slowly, thus eliminating the little jolt you might get when you touch the strip.

Now, when I approach my console, my hands MUST pass over or TOUCH this strip, grounding myself out. When I turn aside to the printer, I am always cautious to touch the strip, and also when I return to the computer, I again touch the strip. I do not have to consciously do this, as my hands have to cross this strip to reach ANY equipment on the desk.

(The least amount of movement can set up a static charge.)

The shiny appearance is a constant reminder of a static possibility.

It costs only a few dollars, but can save so much damage being done, to nerves and equipment.

The Printer Port

By Peter Hale

From Sept-Oct 1989 BoSTUG Newsletter

THE PRINTER PORT By Peter Hale

I want to tell you about what has to be the best printer value for Sinclair users on the market today - the PANASONIC KX-P1124.

It's a 24 pin printer and what a great toy!

The Epson compatible, QL printer that I got in 1984 when I bought my QL had begun to show its age.

But for its indecisiveness in printing NLQ fonts, I would not have looked for a replacement. After more than 20,000 sheets of paper I owed it more than it owed me. It's still a fine draft mode printer, but I need correspondence appearance that won't make clients think I'm cheap.

Clearly, Laser printers are impractical with Sinclair software, although price alone makes them out of the reach of many.

I had seen samples of 24 pin output in LQ mode and I was impressed. Also impressive are the 24 pin's increased speed and additional features. And 24 pin prices have been dropping.

I looked at a lot of printers before choosing the PANASONIC and not only is it cheaper than the competition but it has a lot more features.

WHAT'S SO GOOD ABOUT IT?

It has all the features that most current model printers (whether 9 pin or 24 pin) have:

1. Push tractor feed so you don't waste a sheet of tractor paper to remove the most recent document.

2. Paper parking, which backs out fan-fold paper to insert cut sheet letter head without having to reassemble the paper transport mechanism when you return to fan-fold paper.

3. Multiple resident fonts (the Panasonic has 6 including draft -

all printers count draft as a font) and more sizes and pitches. You get double-high characters and a new pitch called micron, mid-range between elite and condensed.

4. All pitches can be printed in Letter Quality so condensed and subscript look really sharp.

5. Both Epson and IBM printer codes are supported, and the Epson codes are fully downwardly compatible with 9 pin codes.

6. Printer speed is increased by more than 50% over comparable 9 pin machines. In the Panasonic, draft Elite is 192 characters per second and Letter Quality is 63 cps. High Letter Quality speed is possible because it makes a single pass, not two as with NLQ.

[A note when comparing printer speeds. Most printer speeds are quoted for Elite (12 characters to the inch) rather than Pica.]

7. There is a whole range of front panel settings for pitch, font, form length, lines per inch as well as the ability to control the printer from a program.

8. It has a built-in 6K printer buffer. Short documents disappear instantly to regain control of the keyboard even if you don't have TaskMaster to allocate some QL memory to the printer port.

You can add 32 K to the buffer so that custom fonts can be downloaded to the printer.

All current model printers have the above features, so aside from price, WHAT MAKES THE KX-P1124 BETTER THAN THE COMPETITION?

First, it has bottom feed paper handling with a pull-tractor for really accurate form handling. That also lets you have more paper trails sticking out of the printer than anyone else in your neighborhood.

Second, it has 3 macro settings for combinations of pitch, font,

etc. which are held on E-EPROM when the power is off. Push two buttons rather than 20 to change from draft Pica to LQ Prestige in proportional, Elite.

Third, and best of all, it is the only printer that's not a wide area printer but can handle a 8 1/2"x11" sheet sideways. Great for spreadsheets and such that would otherwise need fancy photocopying or a sideways graphics program that takes forever if it works at all.

Fourth, the printer's ribbon, though expensive, is readily reinkable with little mess.

Fifth, it has a 2 year warranty.

There has to be a catch, right? Well, there are a few.

The expensive one is that it comes as a parallel printer only. If you have been using a serial printer to date, you will need a parallel interface. The Miracle one sold by Sharp's is a lot cheaper than the one sold by Panasonic and works just fine.

To get the full benefit of the printer's features you'll have to wade through the manual to learn how to use them from within a program. It had to be written by a former IBM technical writer.

There are also one or three undocumented 'features' that I discovered by accident, but which would have been easy to document.

Finally, and perhaps the most important catch - the one that would give you a good reason for not buying it - is that it is only available in that G** awful computer-putty color. We all know what happens to Sinclair computers if they are not used in a color co-ordinated environment!

Price: List = \$529.00, but as low as \$299.00 in a recent Computer Shopper. That's what I paid for the original QL printer and only \$120.00 more than an entry level 9 pin.

More From the Nov. Speaker

By Hank Dickson

Questions & Answers

Q: What is the future of Perkin-Elmer, the contractor that provided the main mirrors for the HST?

A: Perkin-Elmer was bought out by Hughes Aircraft Co., and is now called Hughes Danbury Optical Systems Inc. It is a continuation of the most highly skilled optical organization in the country which has been and still is deeply involved in the production of both civilian and defense satellites. They are not going to disappear because of one boner, even if it was a big one. They will probably be a big player on NASA's stage for as long as there is a space program.

Q: Are microcomputers on space craft different from regular PC's?

A: The biggest problem with micro's on space vehicles is the stressful environment. The micro's have to be space-hardened, or made resistant to such things as the radiation of the Van Allen belts. Doing this takes a long time, usually several years. There is a phenomenon called the South Atlantic Anomaly--a large surging mass some 600 miles above the South Atlantic containing hyper-charged electrons. While some equipment may be immune to it, everything still has to be prepared to fly through this Anomaly.

Q: What is the error rate for NASA's data transmissions?

A: The Reed-Solomon protocol is the most generally used technique used at Goddard. As a result of the error-correction algorithms and hardware being used there, the error rate is 10^{-8} or better.

Q: How does all the tremendous amount of programming required by space projects get accomplished?

A: Basically by teams. A control center may have 300 employees from all kinds of disciplines, including 60 to 70 programmers. There is a thing almost 20 years of age called the Software Engineering Laboratory run jointly by Goddard and the Computer Science Department at the University of Maryland, College Park. It has been concerned for years with increasing the productivity of programmer teams. The main core program of a control room contains more than one million lines of source FORTRAN code. This is the product of many teams made up of contract and direct hire employees. Maintenance is also a big problem--it never really goes away.

One of the best programmers in everyone's recollection was a music teacher who had taken a job as a computer operator. When she found out what the programmers were doing, she was interested in giving it a try, and proved to be quite talented at it. She moved up the ladder and eventually became one of the most outstanding programmers at GSFC. This of course bears out the long-held notion that there is a strong link between understanding music and writing intelligent code.

IT'S HERE!!

QL TRIVIA-GLUE

HERE IS GREAT NEW COMBINATION GAME!
IF YOU LIKED GLUE AND TRIVIA, THEN THIS IS FOR YOU!
WE HAVE COMBINED THESE TWO GREAT THINKING MAN'S GAMES
IN ONE GREAT PACKAGE!!

13 ROOMS - 13 WEAPONS - 13 SUSPECTS
THAT'S OVER 2100 POSSIBLE OUTCOMES!
AND NOW - OVER 750 TRIVIA QUESTIONS!
QUESTIONS COVER EVERY CONCEIVABLE SUBJECT!
RELIGION - HISTORY - SCIENCES - GEOGRAPHY - ASTRONOMY
YOU'VE NEVER SEEN QUESTIONS LIKE THESE!

Also included, at no extra cost, your choice of
FOOTBALL FORECASTER or LIFE EXPECTANCY FORECASTER
(Specify which you would like when you order.)

WE THINK YOU'LL LIKE THIS ONE!
OUR PRICE? ONLY \$19.95 +\$2ph

AVAILABLE EXCLUSIVELY FROM:
RMG ENTERPRISES

#####

COMPUTERS AT THE GODDARD SPACE FLIGHT CENTER

<u>MACHINES</u>	<u>FEATURES/SHARE</u>	<u>APPLICATIONS</u>
Super Main-Frame		
CRAY XMT	256 Mbyte main memory 100 mips (million instructions per second)	Atmospheric models Climate models
Regular Main-Frames		
IBM CDC Unisis etc.	Large mass storage Conventional speeds	Data analysis Atmospheric models Climate models
Mini-computers (now @ 350 at Goddard)		
DEC CDC Hewlett/Packard	Getting smaller and faster all the time	Data processing Data analysis Orbit prediction for satellites Spacecraft instrumentation orientation and calibration Scheduling systems Circuit design Spacecraft simulators Data communications Electronic mail
Personal computers (@ 4,000 at GSFC)		
IBM	72%	Design of systems
Apple	25%	Word processing
Hewlett/Packard	2%	Financial applications
Miscellaneous	1%	Budgets Work samples Expert systems 3-D modeling Spacecraft data processing

Summary of Computers

Mentioned by Nov. Meeting

Speaker

HUBBLE SPACE TELESCOPE

By Hank Dickson

The HST, launched in April, showed by June that its largest mirrors were out of focus and in need of a fix. But it is nevertheless providing some great astronomical research.

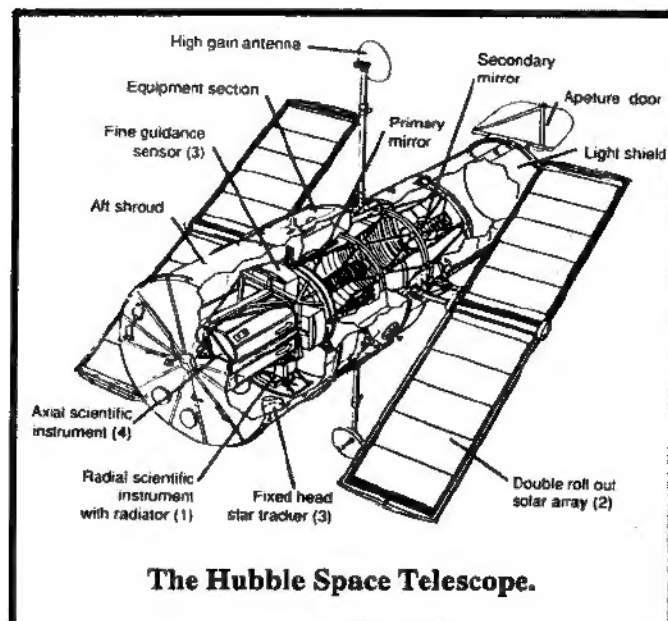
The problem was eventually pinned to a measuring rod that was inserted backwards in an optical device used to guide the grinding of the mirror a decade ago. The result was a mirror curvature off by 1.3 millimeters, less than the thickness of a sheet of paper. Lew Allen of the Jet Propulsion Laboratory said his investigating team will be trying to determine how the mistake could have escaped detection for 10 years.

Plans currently call for a space shuttle flight to hook up with the HST in 1993 during which several items should be taken care of, including a new instrument which would hold the equivalent of different eyeglasses in front of the existing instruments to correct the focus.

The HST has two big solar paddles using European-made solar arrays; two tracking antennae; and five large instruments--two spectrographs, a photometer, and two cameras.

It is 43 feet high, weighs 25,000 pounds, is 13 feet in diameter, and has a set of external rails for astronauts to grasp when they make scheduled visits in orbit.

The HST has two main on-board computers for guidance and instrument-handling. They were developed in the late 70's and early 80's using "8080" technology, which was the best available at that time.



The Hubble Space Telescope.

Stepping Rate Fix

By Bob Swoger & Larry Kenny

From Jan-Feb 1990 Nite-Times News

The May 1989 issue of Capital District T/S Computer Club's newsletter told of two members using TS2068's with Larken DOS having trouble reading each other's disks. It seemed that Fred Lewis could read John Warren's disks but John could not read Fred's disks. This sounded familiar to me as I once had trouble reading disks that came from Rod Gowen and Larry Kenny.

The problem I had was head stepping rate. The drives I use have a 30ms stepping rate. This means that to move from track 0 (the directory track) to track 40 requires 1.2 seconds. A 6 ms stepping rate requires only 240ms. What the controller chip does is wait a period of time to begin reading or writing the disk to give the head time to get to the desired track! The information for the stepping rate is placed in track 0 when the disk is FORMATED.

There is no problem reading the directory track because the

head starts there, but the head on John's drive is not yet over the correct track when the controller tries for the read. For this reason John Warren could not read Fred Lewis's disks. Fred either has a newer controller chip or has drives with a 6 ms stepping rate and FORMATED his disks accordingly.

I could not read the SYSTEM disk that Larry Kenny sent me. Larry had not run into the slower drives up to that point. Mine are DEC dual drive units using TEAC drives purchased in the early 80's as a group buy and are so reliable I just won't give them up.

Larry was sure he had the answer when I phoned him and to get me started back in February of 1988, he sent a program to the club BBS at 2 AM while I slept to fix his disks so that I might read them. I tried it and it worked! I re-wrote it and called it STEPRT.B1 The stepping rate information is in track 0 and his program fixes the disk to the 30 ms stepping rate.

Now about controller chips, Larry stated that he started using the new Western Digital chips that could only select 6 ms or faster head stepping mechanisms. I told him, each time I ordered, to send me only the old WDC WD1770 controller chip in units he built for me and my friends as over 200 of these TEAC units are in the area and we all want to be compatible.

When passing around disks for the LarKen disk operating system be sure they are formatted single side 40 track with a 30 ms head stepping rate so we all can read them.

To read unreadable disks, just load in the program below, it will autorun. After removing the write protect label from the faulty disk, place it into DRIVE 0 and press <ENTER>. You will be able to read it from then on. I have tested it on LARKEN and RMG disks.

```
10 REM STEP RATE CHANGER BY
LARRY KENNY and BOB SWOGER V1.0
30 CLS : PRINT AT 0,0;"This
program fixes the head step rate
problem with disks formatted for
other than 30 ms. Remove the
protection label and place the
disk to be repaired into DRIVE 0
and press enter."
```

```
40 REM The '3' in the machine
code is for 30 ms.
```

```
50 INPUT LINE p$
```

```
60 CLEAR 39999
```

```
70 RANDOMIZE USR 100: OPEN
```

```
#4,"
```

```
dd"
```

```
80 PRINT #4: GO TO 0
```

```
90 RESTORE 150
```

```
110 FOR A=40000 TO 40030
```

```
120 READ B: POKE A,B
```

```
130 NEXT A
```

```
150 DATA 243,205,98,0,175,50,29
,32,205,126,0,205,123,0,62,3,50,
134,32,205,120,0,58,100,0,251,20
1,0,0,0,0
```

```
250 RANDOMIZE USR 40000
```

```
260 GO TO 9989
```

```
360 FOR B=40000 TO 42000: PRINT
PEEK B;",";: NEXT B
```

```
9989 PRINT #4: GO TO 4
```

```
9992 RANDOMIZE USR 100: SAVE "ST
EPRT.B1" LINE 1
```

```
9998 RANDOMIZE USR 100: LOAD "L.
B1"
```

Meeting Subject

The January Meeting Subject will be on T/S 1000 Topics. Cliff Watson and Ted Osheroff will be discussing various topics on the venerable 1000. Blow the dust of your old little black boxes and come join in.

Data Transfer on the Serial Port

By Dave Schoenwetter

Many users now own or have access to more than one computer and find one may have certain advantages over another for creating and editing data files. At times it is easier to create a file on one system but another may offer more flexibility for printing or storing these files. Sometime we may just have used one for a long time and have many files saved when along comes a new system with different storage medium or incompatible formats on the same medium. To save the time of re-entering the data again it is much simpler to just send the file to the other computer.

This procedure can be quite simple if both computers have a serial port and communications software. The data rate can be increased to whatever speed the computer can handle. To use the serial port a small inexpensive piece of hardware must be added "THE NULL MODEM".

The null modem is nothing more than a cable with some signal wires crossed to "fool" the serial port into thinking that it's communicating with a serial device. The only electrical connection between the two computers can be accomplished by three wires, GROUND or COMMON, TRANSMIT DATA and RECEIVE DATA. However the serial port and the communications software need some other conditions before it can establish the connection. It is therefore necessary to jumper outbound signals back to the inbound signals. For my version of the null modem I will show the pin numbering for the 25 pin D-shell connector. Your pin configuration may differ but connecting the same signal wires as shown will produce the same end results.

THE NULL MODEM

SYSTEM A	SYSTEM B
TRANSMIT DATA (pin 2)-----	RECEIVE DATA (pin 3)
RECEIVE DATA (pin 3)-----	TRANSMIT DATA (pin 2)
SIGNAL GROUND (pin 7)-----	SIGNAL GROUND (pin 7)
REQ. TO SEND (pin 4)---	[--REQ. TO SEND (pin 4)
CLEAR TO SEND (pin 5)---	[--CLEAR TO SEND (pin 5)
DATA TERM. RDY (pin 20)---	[--DATA TERM. RDY (pin 20)
DATA SET. RDY (pin 6)---	[--DATA SET RDY (pin 6)
DATA CARR DET (pin 8)---	[--DATA CARR DET (pin 8)

Each system will activate the REQ TO SEND and the DATA TERM RDY line and the jumpers will activate CLEAR TO SEND, DATA SET RDY and DATA CARR DET. If your system does not have all of the above lines present on the serial port then they can be omitted on the null modem.

Both systems must be operating at the same speed (baud rate) and parameters (B,n,1). Up and down loading is now done to transfer the files, use simple buffer transfers or XMODEM if error checking is desired.

Dave Schoenwetter SINCUS 1988

Ed. Note: Dave uploaded this article from his IBM-PC to the local BBS, TCCS as a text file. I then downloaded it, "NULMODEM.TXT" via Xmodem and Mterm (Casby's Loader V Program) saved the file to tape, ran it through Casby's Unloader program, loaded it into my Mscript, edited it, and printed it out. Start to finish about 35 minutes, and I didn't have to get the wife to shovel the driveway.

7

CATS maintains a gratis exchange of newsletters with approximately 30 Users Groups across the U.S. and Canada. Groups not sending a newsletter to us for six months are automatically taken off the list.

CATS BBS: (301) 588-0579. 8-N-1. 300/1200 baud. News and general information, 24 hours a day.

Time SIG on CompuServe: Wednesday night, 10:00 PM Eastern time (GO CLUB).

Networks

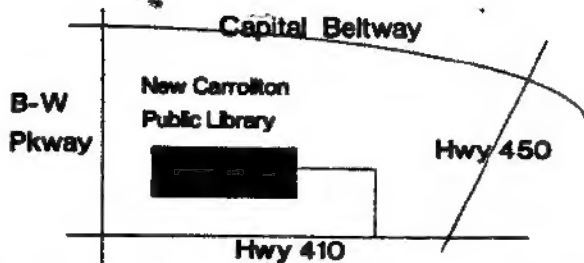
Memberships cost \$15 per year, are good for 12 months, and include all privileges (access to libraries, group buys, etc.). A newsletter only subscription is available for persons living outside the Washington Metro area and is \$12 per year.

Meetings

Monthly meetings are held from 11:00 AM to 4:30 PM, on the second Saturday of each month, at the New Carrollton Public Library.

CATS Newsletter
P.O. Box 11017
Takoma Park, MD 20913

FIRST CLASS MAIL



The next meeting of CATS will be held on: January 5, 1991

11:00 AM Workshop

2:00 PM General Meeting

At: New Carrollton Public Library 7414 Riverdale Road (Hwy 410), New Carrollton, MD

IF YOU ARE NOT A MEMBER OF CATS. THIS IS THE ONLY ISSUE YOU WILL RECEIVE

Executive Board
President Ruth Fegley
1st Vice President Hank Dickson
2nd Vice President Tom Robbins
Recording Secretary Audrey Curnutt
Corresponding Secretary Joe Miller
Treasurer Barry Washington
Members-at-Large Duane Parker
Akin Olowofeye Cliff Watson
Immediate Past President Bill Barnhart
Newsletter Editor & Tim Swenson
contact person (703) 820-6657